

Name _____

STUDY GUIDE Chapter 7: Cell Structure and Function

1. _____ are the basic units of life, and _____ are specialized parts of a cell that perform specific functions. _____ is the jelly-like fluid inside cells.
2. Name 4 structures that are found in ALL cells.
• _____ • _____
• _____ • _____
3. Unicellular organisms like bacteria that lack a **nucleus** are called _____. Protists, fungi, plants, and animals are considered _____ because their DNA is enclosed within a **nucleus**.
4. The control center of the cell is the _____. It contains _____, which carry the cell's genetic information, a _____, which controls what moves into and out of the nucleus, and the _____, which manufactures ribosomes.
5. _____ store and move materials between organelles and the cell's surface. Plants have a large central _____ that stores water, salts, proteins, and carbohydrates (while those in animal cells are smaller). _____ contain digestive enzymes that clean up the cell and are typically found only in _____ cells.
6. The _____ helps cells maintain shape and is involved in movement of and with the cell. _____ form in animal cells to facilitate the movement of chromosomes during cell division. The _____ modifies, sorts, and packages proteins and lipids.
7. Proteins are produced at the _____. The internal membrane system that transports lipids and proteins is called the _____. The _____ has ribosomes attached to it, but the _____ does not have ribosomes.
8. Chemical energy from food is converted into ATP during respiration in the _____. Numerous folds of its inner membrane that increase the organelle's surface area to produce more ATP are called _____. Energy from sunlight is converted into chemical energy (glucose) in the _____. These photosynthetic organelles are found only in _____.
9. The _____ supports, shapes and protects prokaryotic and plant cells (but is not found in animal cells). The selectively permeable barrier that regulates what enters and leaves ALL cells is the _____. It contains a _____ layer of phospholipids.

10. The _____ or “head” end of phospholipids is polar and faces the water inside and outside of the cell because it is _____ or “water loving.” The _____ tails are nonpolar and face each other toward the center of the lipid bilayer because they are _____ or “water fearing.”

11. Diffusion, which is an example of _____ transport, is the movement of a solute from _____ to _____ concentration and therefore does NOT require _____. Active transport moves materials from _____ to _____ concentration and therefore DOES require _____.

12. In _____, molecules pass from high to low concentration through membrane channels. Osmosis is the diffusion of _____ across a selectively permeable membrane. The water moves from _____ to _____ concentration.

13. In a/an _____ solution, the concentrations of solutes and water are the same on both sides of the cell membrane, so the cell neither swells nor shrinks. In a/an _____ solution, there is a lower concentration of solutes and a higher concentration of water outside the cells, so water moves into the cell, potentially causing the cell to rupture, which is known as _____. In a/an _____ solution, there is a higher concentration of solutes and a lower concentration of water outside the cells, so water moves out of the cell, causing the cell to shrink, which is known as _____.

14. A sodium-potassium pump moves Na^+ _____ cells and K^+ _____ cells. Because the pump is moving the ions from low to high concentration, it requires _____ to provide the necessary energy for this method of active transport.

15. Explain the difference between endocytosis and exocytosis.

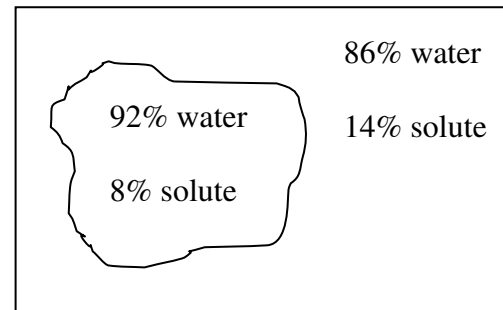
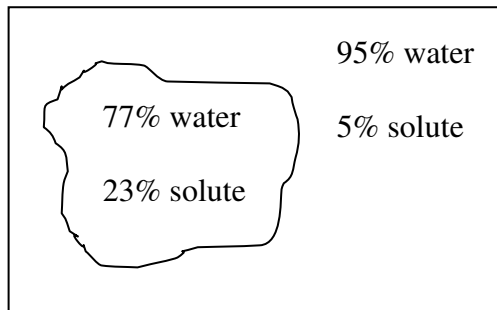
16. The relatively constant internal physical and chemical conditions maintained by organisms are referred to as _____. To maintain these conditions, unicellular organisms _____, _____ to the environment, transform _____, and _____.

17. In more complex multicellular organisms, cells are organized into _____, which are organized into _____, which are organized into _____.

18. Think back to the diffusion and osmosis lab, where the solution inside the model cell turned black overnight and the water in the beaker ended up pale yellow. Explain what happened and why by answering the following:

- Did the iodine move into the “cell”?
- What is your “proof”?
- Did the starch leave the “cell”?
- What is your “proof”?
- What can you conclude about the size of iodine molecules vs starch molecules?

19. Label each of the following cell environments as *hypertonic*, *hypotonic*, or *isotonic*. Then draw arrows showing the direction water moves (*out of the cell, into the cell, or both*)



20. Label each of the following organelles

- A.
- B.
- C.
- D.
- E.
- F.
- G.
- H.

